

Analysis of the Frequency Response of a Water Electrolysis cell.

Abstract

High frequency behavior and characteristics of a water electrolysis cell are evaluated in this work. Each experimental electrolytic bath of this report was configured to differ from other setups in electrodes' sizes, the distance between electrodes and electrolyte molarity. During the tests, the voltage, current and the phase angle has been recorded and the Bode plot of the nominal transfer function of the system was drawn for each experimental case. In every single experiment, the same pattern was observed in both magnitude and phase plots. A simplified equivalent circuit has been introduced as a result, which can justify the observed behavior.

Keyword: Water electrolysis; Frequency response; Spectrum; Equivalent circuit; Bode plot